

SERIAL NO. 09/930,964

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IN THE CLAIMS:

Please **AMEND** claim 36, as follows:

1. (PREVIOUSLY PRESENTED) An objective lens to form beam spots using light beams of respectively different wavelengths, the objective lens comprising:
 - an inner region including an optical center of the objective lens;
 - a holographic region surrounding said inner region and comprising a plurality of steps disposed on a lens surface of the objective lens; and
 - an outer region surrounding said holographic region,
 - wherein
 - said inner region transmits the light beams,
 - said holographic region diffracts a second one of the light beams, and
 - the outer region transmits a first one of the light beams.

2. (ORIGINAL) The objective lens according to claim 1, wherein a first focal plane on which a first portion of the second light beam incident on said holographic region is focused coincides with a second focal plane on which a second portion of the second light beam incident on said inner region is focused.

3. (ORIGINAL) The objective lens according to claim 1, wherein said holographic region further comprises grooves to diffract the second light beam.

4. (ORIGINAL) An objective lens for an optical pickup, the objective lens comprising:
 - a holographic region having a plurality of concentric ring-shaped steps formed on a lens surface of the objective lens,
 - wherein the objective lens has a wavelength dependence such that two light beams having corresponding different wavelengths and an identical diffractive order form appropriate different wavefronts corresponding to reproducing and/or recording information from and/or to corresponding two kinds of optical recording media having respectively different thickness.

5. (ORIGINAL) The objective lens according to claim 4, further comprising an inner region surrounded by said holographic region, wherein a first focal plane on which a first portion of the second light beam incident on said holographic region is focused coincides with a second

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focal plane on which a second portion of the second light beam incident on said inner region is focused.

6. (ORIGINAL) The objective lens according to claim 4, wherein said holographic region includes grooves to diffract the light beam.

7. (PREVIOUSLY PRESENTED) An objective lens to form beam spots of different sizes using corresponding first and second light beams of respectively different wavelengths, the objective lens comprising:

an inner region including an optical center of the objective lens which has an optical property optimized to focus the first light beam onto a first optical recording medium of a first thicknesses and to focus the second light beam onto a second optical recording medium of a second thickness other than the first thickness; and

a diffractive region surrounding said inner region and comprising an optical property optimized so as to selectively diffract the first and second light beams as a function of wavelength so as to change a numerical aperture of the objective lens.

8. (PREVIOUSLY PRESENTED) The objective lens of claim 7, wherein, to adjust the numerical aperture as the function of the wavelength, the diffractive region:

selectively diffracts the first light beam having a first wavelength so as to not be focused on the first optical recording medium, and

selectively allows the second light beam of a second wavelength to be focused on the second recording medium.

9. (PREVIOUSLY PRESENTED) The objective lens of claim 8, wherein the diffractive region selectively diffracts the first light beam as first order light.

10. (PREVIOUSLY PRESENTED) The objective lens of claim 9, wherein the diffractive region comprises a blazed type hologram.

11. (PREVIOUSLY PRESENTED) The objective lens of claim 9, wherein the diffractive region comprises grooves formed in stepwise depths.

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12. (PREVIOUSLY PRESENTED) The objective lens of claim 7, wherein the diffractive region is optimized to selectively diffract the first and second light beams so as to reduce spherical aberration of the first and second light beams when focused on the first and second optical recording media as the function of the wavelength.

13. (PREVIOUSLY PRESENTED) The objective lens of claim 7, wherein the diffractive region is optimized to selectively diffract the first and second light beams such that the numerical aperture of the objective lens is greater for the second optical recording medium than for the first optical recording medium.

14. (PREVIOUSLY PRESENTED) The objective lens of claim 13, wherein the diffractive region diffracts the first light beam of a first wavelength so as to not be focused on the first optical recording medium.

15. (PREVIOUSLY PRESENTED) The objective lens of claim 14, wherein the diffractive region allows the second light beam of a second wavelength to be focused on the second optical recording medium.

16. (PREVIOUSLY PRESENTED) The objective lens of claim 15, wherein the diffractive region is disposed on an optical surface having the inner region.

17. (PREVIOUSLY PRESENTED) The objective lens of claim 16, wherein the optical surface is optimized with respect to the first and second light beams to be received prior to being reflected from the first and second optical recording media.

18. (PREVIOUSLY PRESENTED) The objective lens according to claim 7, wherein a first focal plane to which a first portion of the second light beam incident on the diffractive region is directed coincides with a second focal plane to which a second portion of the second light beam incident on the inner region is directed.

19. (PREVIOUSLY PRESENTED) The objective lens according to claim 7, wherein the diffractive region further comprises grooves optimized with respect to the second light beam so to maximize first order light and to minimize zeroth order light.

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20. (PREVIOUSLY PRESENTED) An objective lens for use in focusing light beams on optical recording media of different thicknesses, comprising:

an inner region which directs the light beams having corresponding wavelengths to be focused on the corresponding optical recording media having respectively different thicknesses; and

a diffractive region having a wavelength dependence such that the light beams are selectively diffracted so as to adjust a numerical aperture of the objective lens.

21. (PREVIOUSLY PRESENTED) The objective lens of claim 20, wherein the diffractive region diffracts one of the light beams having one of the wavelengths so as to reduce spherical aberration when recording and/or reproducing with respect to a corresponding one of the optical recording media.

22. (PREVIOUSLY PRESENTED) The objective lens of claim 21, wherein:
the one optical recording medium is a compact disk, and
the diffractive portion diffracts the one light beam as first order light so as to reduce the spherical aberration with respect to the compact disk.

23. (PREVIOUSLY PRESENTED) The objective lens of claim 22, wherein:
another optical recording medium is a digital versatile disk, and
the diffractive portion allows another light beam of another wavelength other than the one wavelength to be directed to the digital versatile disk so as to record and/or reproduce with respect to the digital versatile disk together with a portion of the another light beam focused by the inner region.

24. (PREVIOUSLY PRESENTED) The objective lens of claim 20, wherein the diffractive portion diffracts one of the light beams as first order light so as to adjust the numerical aperture of the objective lens in order to record and/or reproduce with respect to a corresponding one of the optical recording media.

25. (PREVIOUSLY PRESENTED) The objective lens of claim 20, wherein a first focal plane on which a first portion of one light beam incident on the diffractive region is directed coincides with a second focal plane on which a second portion of the one light beam incident on the inner region is directed.

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26. (PREVIOUSLY PRESENTED) The objective lens of claim 20, wherein a first focal plane on which a first portion of one light beam incident on the diffractive region is directed does not coincide with a second focal plane on which a second portion of the one light beam incident on the inner region is directed such that a spherical aberration is reduced at the second focal plane and the numerical aperture is adjusted according to the wavelength of the one light beam.

27. (PREVIOUSLY PRESENTED) The objective lens of claim 26, wherein a third focal plane on which a first portion of another light beam incident on the diffractive region is directed coincides with a fourth focal plane on which a second portion of the another light beam incident on the inner region is directed.

28. (PREVIOUSLY PRESENTED) An optical system for use in focusing light beams on optical recording media of different thicknesses, comprising:

an optical element; and

an objective lens,

wherein the optical element comprises:

an inner region which directs the light beams having corresponding wavelengths to be focused by the objective lens on the corresponding optical recording media having respectively different thicknesses; and

a diffractive region having a wavelength dependence such that the light beams are selectively diffracted so as to adjust a numerical aperture of the objective lens.

29. (PREVIOUSLY PRESENTED) The optical system of claim 28, wherein the diffractive region diffracts one of the light beams having one of the wavelengths so as to reduce spherical aberration when recording and/or reproducing with respect to a corresponding one of the optical recording media.

30. (PREVIOUSLY PRESENTED) The optical system of claim 29, wherein:

the one optical recording medium is a compact disk, and

the diffractive portion diffracts the one light beam as first order light so as to reduce the spherical aberration with respect to the compact disk.

31. (PREVIOUSLY PRESENTED) The optical system of claim 30, wherein:

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another optical recording medium is a digital versatile disk, and the diffractive portion allows another light beam of another wavelength other than the one wavelength to be directed through the objective lens to the digital versatile disk so as to record and/or reproduce with respect to the digital versatile disk together with a portion of the another light beam which passed through the inner region and the objective lens.

32. (PREVIOUSLY PRESENTED) The optical system of claim 28, wherein the diffractive portion diffracts one of the light beams as first order light so as to adjust the numerical aperture of the objective lens in order to record and/or reproduce with respect to a corresponding one of the optical recording media.

33. (PREVIOUSLY PRESENTED) The optical system of claim 28, wherein a first focal plane on which a first portion of one light beam incident on the diffractive region is directed by the objective lens coincides with a second focal plane on which a second portion of the one light beam incident on the inner region is directed by the objective lens.

34. (PREVIOUSLY PRESENTED) The optical system of claim 28, wherein a first focal plane on which a first portion of one light beam incident on the diffractive region is directed by the objective lens does not coincide with a second focal plane on which a second portion of the one light beam incident on the inner region is directed by the objective lens such that a spherical aberration is reduced at the second focal plane and the numerical aperture is adjusted according to the wavelength of the one light beam.

35. (PREVIOUSLY PRESENTED) The optical system of claim 34, wherein a third focal plane on which a first portion of another light beam incident on the diffractive region is directed by the objective lens coincides with a fourth focal plane on which a second portion of the another light beam incident on the inner region is directed by the objective lens.

36. (CURRENTLY AMENDED) An objective lens for an optical pickup, the objective lens comprising at least one holographic region so as to selectively transmit data with respect to disks of different thicknesses using light beams, wherein the at least one holographic region comprises a plurality of gratings on the objective lens, at least one part of the at least one holographic region transmits the light beams for use in transmitting the data with respect to the disks of different thicknesses, and at least one other part of the at least one holographic region

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diffracts one of the light beams so as to adjust a numerical aperture of the objective lens for use in transmitting the data with respect to the disks of different thicknesses.

37. (PREVIOUSLY PRESENTED) An optical pickup for use with recording media, comprising:

a light source to emit light beams of different wavelengths;

an objective lens comprising at least one holographic region, the at least one holographic region comprising a plurality of gratings on the objective lens; and

an optical detector to detect the light beams after reflection from the recording media and after having passed through the objective lens,

wherein:

at least one part of the at least one holographic region transmits the light beams,

and

at least one other part of the at least one holographic region diffracts one of the light beams.